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WASHINGTON, DC 20004

EXAMINER
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BATTAGLIA, MICHAEL V

ART UNIT	PAPER NUMBER
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2652

DATE MAILED: 03/05/2004

3

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/994,693

Applicant(s)

JEONG ET AL.

Examiner

Michael V Battaglia

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 November 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 November 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Priority*

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### *Drawings*

2. Figures 1 and 2 should be designated by a legend such as –Prior Art– because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
3. The drawings are objected to because in Fig. 3, the substrate of the detecting unit is mislabeled as “126” when it should be labeled as –121–. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### *Specification*

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.
5. The disclosure is objected to because of the following informalities.
  - a. On line 20 of page 5, the examiner suggests replacing “substrates” with –substrate–.
  - b. On line 22 of page 5, the examiner suggests replacing “fix to” with –fix–.Appropriate correction is required.

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6. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### *Claim Objections*

7. Claim 22 is objected to because of the following informality. On line 3 of claim 22, the examiner suggests replacing "obtaining" with -obtained by-. Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

8. The following is a quotation of the first and the second paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 6, 10, 16, and 21 and therefor 2-5, 7-9, 11-15, 17-20, and 22 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement and/or under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The independent claims claim that the lead frame package of the optical head has an **opening communicating** either with an outside of the lead frame package or with both a hologram optical element and an outside of the lead frame package. It is unclear how an opening can

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communicate with anything; hence the claims are indefinite. Furthermore, the specification on page 12, lines 14-16, merely repeats the claims in reciting that the opening communicates with a hologram optical element and an outside of the lead frame package and does not describe how to make and use a device in which the opening communicates or what the opening communicates.

Does the <sup>applicant</sup> intend to describe and claim an opening through which information is conveyed either from outside of the lead frame package or from both the hologram optical element and outside of the lead frame package? The disclosure is required to be clarified without adding new matter.

9. Claims 2, 7, 11, 17, and 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Dependent claims 2, 7, 11, 17, and 22 do not further limit their respective base claims and are therefor indefinite because they remove the limitation in the base claims that the detecting unit is separate from the lead frame package by adding that the detecting unit is fixed to the lead frame package.

10. Claim 20 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. A direction parallel or vertical to said lead frame package is vague and unclear. Also, the meaning rotating the lead frame package about the hologram optical element is vague unclear. Due to the vagueness and lack of clarity in claim 20, no prior art rejection will be provided below.

***Claim Rejections - 35 USC § 102***

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless -

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 6, 10, and 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Imai (US 6,483,650).

In regard to claim 1, Imai discloses an optical pickup device, comprising; a lead frame package (Fig. 6, element 40) having a sub-mount (Fig. 6, element immediately below element 41), a laser source mounted on said sub-mount and emitting a laser beam (Figs. 6 and 7, element 41), a reflective element reflecting said beam (Figs. 6 and 7, element 42), a transmission-type refraction grating dividing said beam into a plurality of beams including a main beam and two sub beams which are incident to an optical medium (Figs. 6 and 7, element 44 and Col. 22, lines 29-38), and a hologram optical element diffracting the beams reflected from an optical medium (Figs. 6 and 7, element <sup>44</sup>~~64~~ and Col. 22, line 64-Col. 23, line 3), said lead frame package having an opening through which information is conveyed from outside of the lead frame package (Figs. 6 and 7, opening above element 44); and a detecting unit (Figs. 6 and 7, element 44 and Fig. 7, elements A, B, and C) having a substrate (Figs. 6 and 7, element 44) and a photo detector (Fig. 7, elements A, B, and C) mounted on said substrate, said detecting unit being separate from said lead frame package (Fig. 7 and Col. 21, lines 62-64). The examiner interprets the underlying layer (Figs. 6 and 7, element 44) on which the photo detector (Fig. 7, elements A, B, and C) is mounted as being a substrate. The examiner interprets the detecting unit (Figs. 6 and 7, elements 44 and A, B, and C) as being separate from the lead frame package because the detecting unit is a separate entity

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before it is integrated into or joined with the lead frame package. The examiner notes the applicant's separate detecting unit is also integrated into the applicant's lead frame package.

In regard to claim 6, Imai discloses an optical pickup device, comprising: a lead frame package (Fig. 6, element 40) having a sub-mount (Fig. 6, element immediately below element 41), a light source mounted on said sub-mount and emitting a laser beam (Figs. 6 and 7, element 41), a transmission-type diffraction grating element dividing said beam into a main and two sub beams which are incident to an optical medium (Figs. 6 and 7, element 147 and Col. 22, lines 29-38), and a hologram optical element diffracting said beams reflected from said optical medium (Figs. 6 and 7, element 64 and Col. 22, line 64-Col. 23, line 3), said lead frame package having an opening through which information is conveyed from outside of said lead frame package (Figs. 6 and 7, opening above element 44); and a detecting unit (Figs. 6 and 7, elements 44 and A, B, and C) having a substrate (Figs. 6 and 7, element 44) and a photo detector (Fig. 7, elements A, B, and C) mounted on said substrate, said detecting unit being separate from said lead frame package (Fig. 7 and Col. 21, lines 62-64). The examiner interprets the underlying layer (Figs. 6 and 7, element 44) on which the photo detector (Fig. 7, elements A, B, and C) is mounted as being a substrate. The examiner interprets the detecting unit (Figs. 6 and 7, elements 44 and A, B, and C) as being separate from the lead frame package because the detecting unit is a separate entity before it is integrated into or joined with the lead frame package. The examiner notes the applicant's separate detecting unit is also integrated into the applicant's lead frame package.

In regard to claim 10, Imai discloses an optical pickup device, comprising: a lead frame package (Fig. 6, element 40) having a sub-mount (Fig. 6, element immediately below element 41), a light source mounted on a sub-mount and emitting a laser beam (Figs. 6 and 7, element 41), a reflecting element directing said beam onto an optical medium (Figs. 6 and 7, element 42), and a

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hologram optical element diffracting said beam reflected from said optical medium (Figs. 6 and 7, element 64 and Col. 22, line 64-Col. 23, line 3), said lead frame package having an opening through which information is conveyed from outside of said lead frame package (Figs. 6 and 7, opening above element 44); and a detecting unit (Figs. 6 and 7, element 44 and Fig. 7, elements A, B, and C) having a substrate (Figs. 6 and 7, element 44) and a photo detector (Fig. 7, elements A, B, and C) mounted on said substrate, said detecting unit being separate from said lead frame package (Fig. 7 and Col. 21, lines 62-64). The examiner interprets the underlying layer (Figs. 6 and 7, element 44) on which the photo detector (Fig. 7, elements A, B, and C) is mounted as being a substrate. The examiner interprets the detecting unit (Figs. 6 and 7, elements 44 and A, B, and C) as being separate from the lead frame package because the detecting unit is a separate entity before it is integrated into or joined with the lead frame package. The examiner notes the applicant's separate detecting unit is also integrated into the applicant's lead frame package.

In regard to claim 16, Imai discloses an optical pickup device, comprising: a lead frame package (Fig. 6, element 40) having a sub-mount (Fig. 6, element immediately below element 41), a light source (Figs. 6 and 7, element 41) mounted on said sub-mount and emitting a laser beam which is incident to and reflected from an optical medium (Fig. 7, element 11), and a hologram optical element diffracting said beams reflected from said optical medium (Figs. 6 and 7, element 64 and Col. 22, line 64-Col. 23, line 3), said lead frame package having an opening through which information is conveyed from both said hologram optical element and outside of said lead frame package (Figs. 6 and 7, opening above element 44); and a detecting unit (Figs. 6 and 7, element 44 and Fig. 7, elements A, B, and C) having a substrate (Figs. 6 and 7, element 44) and a photo detector (Fig. 7, elements A, B, and C) mounted on said substrate, said detecting unit being separate from said lead frame package (Fig. 7 and Col. 21, lines 62-64). The examiner interprets



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the underlying layer (Figs. 6 and 7, element 44) on which the photo detector (Fig. 7, elements A, B, and C) is mounted as being a substrate. The examiner interprets the detecting unit (Figs. 6 and 7, elements 44 and A, B, and C) as being separate from the lead frame package because the detecting unit is a separate entity before it is integrated into or joined with the lead frame package. The examiner notes the applicant's separate detecting unit is also integrated into the applicant's lead frame package.

12. Claims 2, 7, 11, 17, and 21 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Imai.

In regard to claims 2, 7, 11, and 17, Imai discloses that the detecting unit is disposed within said opening of said lead frame package (Fig. 6, elements 40 and 44), said detecting unit fixed to said lead frame package in a position to receive said beams diffracted from said hologram optical element (Figs. 6 and 7 and Col. 23, lines 61-65). The examiner interprets the detecting unit being integrated into the lead frame package as being fixed to the lead frame package. Imai does not explicitly disclose that the detecting unit is moved to a position to receive the beams diffracted from said hologram optical element before being fixed to the lead frame package. However, either it is inherent that the detecting unit is moved to a position to receive the beams diffracted from said hologram optical element before being fixed to the lead frame package because the detecting unit is shown in a position to receive the beams from said hologram optical element in Fig. 6 and the detecting unit would have to get to that position during manufacture or it would have been obvious to one of ordinary skill in the art at the time the invention was made to move the detecting unit of Imai to a position to receive the beams diffracted from said hologram optical element before fixing the detecting unit to the lead frame package, the motivation being to fix the detecting unit in a

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position to receive the beams diffracted from said hologram optical element to implement the suggested invention of Imai.

In regard to claim 21, Imai discloses a process in an optical pickup device, comprising the steps of: providing a lead frame package (Fig. 6, element 40) having a sub-mount (Fig. 6, element immediately below element 41), a light source mounted said sub-mount and emitting a laser beam which is incident to and reflected from an optical medium (Figs. 6 and 7, element 41), and a hologram optical element (Figs. 6 and 7, element 48 and Col. 22, line 64-Col. 23, line 3) diffracting said beams reflected from said optical medium (Fig. 7, element 11), said lead frame package having an opening through which information is conveyed from both said hologram optical element and an outside of said lead frame package (Figs. 6 and 7, opening above element 44); providing a detecting unit (Figs. 6 and 7, element 44 and Fig. 7, elements A, B, and C) having a substrate (Figs. 6 and 7, element 44) and a photo detector mounted on said substrate (Fig. 7, elements A, B, and C), said detecting unit being separate from said lead frame package (Figs. 6 and 7); locating said detecting unit within said opening of said lead frame package (Fig. 6); and fixing said detecting unit to said lead frame package (Col. 23, lines 61-65). The examiner interprets the underlying layer (Figs. 6 and 7, element 44) on which the photo detector (Fig. 7, elements A, B, and C) is mounted as being a substrate. The examiner interprets the detecting unit (Figs. 6 and 7, elements 44 and A, B, and C) as being separate from the lead frame package because the detecting unit is a separate entity before it is integrated into or joined with the lead frame package. The examiner notes the applicant's separate detecting unit is also integrated into the applicant's lead frame package. The examiner interprets the detecting unit as being fixed to the lead frame package because it is integrated into the lead frame package. Imai does not explicitly disclose moving the detecting unit with respect to the lead frame package. However, either it is inherent

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that during manufacture, the detecting unit is moved with respect to the lead frame package before the detecting unit is fixed to the lead frame package so that the detecting unit is positioned in the correct place to receive the beams from said hologram optical element or it would have been obvious to one of ordinary skill in the art at the time the invention was made to move the detecting unit of Imai with respect to the lead frame package, the motivation being to fix the detecting unit in a position to receive the beams diffracted from said hologram optical element to implement the suggested invention of Imai.

*Claim Rejections - 35 USC § 103*

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3, 8, 13, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imai in view of Barkan et al (hereafter Barkan) (US 6,637,657).

Imai discloses the optical pickup devices of claims 1, 6, 10, and 16 having a detecting unit (Figs. 6 and 7, elements 44, A, B, and C). Imai does not disclose that the detecting unit is a chip-on-board photo diode package.

Barkan discloses that use of a chip-on-board photo diode package for a detecting unit makes the detecting unit smaller and reduces cost (Col. 6, lines 36-40).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a chip-on-board photo diode package for the detecting unit of Imai as suggested by Barkan, the motivation to reduce the size and cost of the detecting unit.

14. Claims 4, 9, 14, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imai in view of Sakakibara et al (hereafter Sakakibara) (JP 09-213989).

Imai discloses the optical pickup devices of claims 1, 6, 10, and 16 having a detecting unit (Figs. 6 and 7, elements 44, A, B, and C). Imai does not disclose that the detecting unit is a flip-chip package.

Sakakibara discloses that use of a flip-chip package for a detecting unit reduces the size of the detecting unit (Abstract).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a flip-chip package for the detecting unit of Imai as suggested by Sakakibara, the motivation to reduce the size of the detecting unit.

15. Claims 5 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imai.

Imai discloses the optical head of claims 1 and 10 having a reflective element (Fig. 6, element 42) that reflects a laser beam. Imai discloses that the reflective element is a prism that bends the optical path of a laser beam (Col. 21, lines 53-55). Fig. 6 shows the optical path bent by the reflective element by approximately 90 degrees. Imai does not disclose that the reflective element is a mirror. Imai further discloses a mirror (Fig. 5, element 32) that bends an optical path by approximately 90 degrees. A prism used for reflecting light and a mirror were art-recognized equivalents at the time of the invention for the purpose of reflecting light at a 90-degree angle and one of ordinary skill would have found it obvious to use either one including a mirror for reflecting light at the location of the reflective element of Imai.

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16. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Imai in view of Kouno (US 6,404,709).

Imai discloses the optical pickup devices of claim 10 having a transmission-type diffraction grating element dividing a laser beam into a plurality of beams including a main and two sub beams which are incident to an optical medium (Figs. 6 and 7, element 47) and a reflecting element reflecting the laser beam on path to an optical medium (Figs. 6 and 7, element 42). Imai does not disclose a reflection-type diffraction grating element dividing said beam emitted from said light source into a plurality of beams including main and two sub beams reflected toward said optical medium.

Kouno discloses a reflection-type diffraction grating element (Fig. 1, element 15b) dividing a beam emitted from a light source (Fig. 1, element 41) into a plurality of beams including main and two sub beams reflected toward said optical medium (Col. 5, lines 15-22 and 54-57). Kouno (Col. 5, lines 15-22 and 54-57) further discloses use of the reflection-type diffraction grating element in place of transmission-type diffraction grating element (Fig. 1, element 15a) and a reflecting element (Fig. 1, element 16).

Therefor, a reflection-type diffraction grating element was an art-recognized equivalent to a transmission-type diffraction grating element with a reflecting element at the time of the invention for the purpose of separating a beam into plural beams toward the same direction and one of ordinary skill would have found it obvious to use either one including the reflection-type diffraction grating element of Kouno for separating and directing the beam of Imai in the manner suggested by Imai.

17. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Imai in view of Maeda (US 4,926,036).

Imai discloses the optical pickup devices of claim 21 having a photo detector, moving a detecting unit with respect to a lead frame package, and fixing the detecting unit to the lead frame package. Imai does not disclose monitoring a signal obtained from said photo detector during movement of said detecting unit with respect to said lead frame package; and fixing said detecting unit to said lead frame package when said signal is in a predetermined range.

Maeda discloses monitoring a signal obtained from a photo detector during movement of a detecting unit to put the light detector in a predetermined position or range (Col. 2, lines 29-36).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to monitor a signal obtained from the photo detector of Imai during movement of said detecting unit with respect to said lead frame package as suggested by Maeda; and to fix the detecting unit of Imai to the lead frame package when the signal is in a predetermined range, as suggested by Maeda, the motivation being to accurately position the detecting unit in a position light receiving area.

#### ***Citation of Relevant Prior Art***

18. Kim (US 5,995,476) discloses an optical pickup device having a lead frame package that has laser, a transmission-type diffraction grating, and a hologram diffracting a laser beam to a photo detector (Fig. 1). Takei et al (US 6,151,288) discloses a detecting unit that communicates with a hologram element to adjust the hologram (Col. 5). Yamashita (US 6,363,047) teaches that adding a reflective element or mirror will increase compactness (Col. 8). Ogawa et al (US 6,556,532) discloses an optical pickup device having a lead frame package that has laser, a reflecting element, a transmission-type diffraction grating, and a hologram diffracting a laser beam to a separate photo detector (Fig. 4). Opheij (US 4,810,871) discloses a circuit to electronically adjust a position of a

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detecting unit by monitoring signal output from a photo detector (Fig. 10). Yoshimoto et al (US 6,254,284) discloses a detecting unit that is moved and rotated to a correct receiving position (Fig. 3).

### *Conclusion*

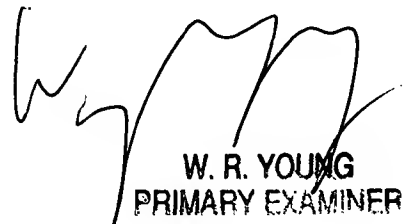
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael V Battaglia whose telephone number is (703) 305-4534. The examiner can normally be reached on 5-4/9 Plan with 1st Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T Nguyen can be reached on (703) 305-9687. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Michael Battaglia



W. R. YOUNG  
PRIMARY EXAMINER